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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/612,763  | 06/30/2003  | Kaustubh Das         | 884.934US1          | 5912             |
| 21186   | 7590        | 10/11/2006           | EXAMINER            |                  |
| SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.<br>P.O. BOX 2938<br>MINNEAPOLIS, MN 55402 |             |                      | JUNG, DAVID YIUK    |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 2134                |                  |

DATE MAILED: 10/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/612,763

**Applicant(s)**

DAS ET AL.

**Examiner**

David Y. Jung

**Art Unit**

2134

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

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## **DETAILED ACTION**

### **CLAIMS PRESENTED**

Claims 1-26 are presented.

### **CLAIM REJECTIONS**

#### ***Claim Rejections - 35 USC § 102***

Claims 1-7, 10-11, 13-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Frantzen (Frantzen, Shuey, StackGhost: Hardware Facilitated Stack Protection, Proceedings of the 10<sup>th</sup> USENIX Security Symposium, August, 2001).

Frantzen teaches:

Clam 1: A processor comprising:

a plurality of functional units (Section 2.1 Conventional function calls, i.e. function calls), including a first functional unit and a second functional unit, the first functional unit to receive instructions, to determine whether ones of the instructions are associated with a virus, and to transmit the ones of the instructions not associated with the virus to the second functional unit (section 1 Introduction, i.e., solution to attacks – the first paragraph, Sparc return address handlings – the second paragraph).

Claims 2-6: various virus detection and handling (section 1 Introduction, i.e., solution to attacks – the first paragraph, Sparc return address handlings – the second paragraph).

Claim 7: apparatus, etc, (section 1 Introduction, i.e., solution to attacks – the first paragraph, Sparc return address handlings – the second paragraph).

Claims 10-11, 13-17: various virus detection and handling (section 1 Introduction, i.e., solution to attacks – the first paragraph, Sparc return address handlings – the second paragraph).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8-9, 12, 18-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frantzen (Frantzen, Shuey, StackGhost: Hardware Facilitated Stack Protection, Proceedings of the 10<sup>th</sup> USENIX Security Symposium, August, 2001).

Claims 8-9, 12, 18-26 recite "virus signatures."

Regarding Claims 8, Frantzen teaches as noted in the previous paragraphs.

These passages of Frantzen do not teach “virus signatures” handling in processor hardware in the sense of the claim.

Frantzen does teach use of the return address stack (section 3.4). This permits the use of hash table as noted in Frantzen (section 3.4). Frantzen does suggest Non-Exec pages (section 7.5). These approaches, such as Sun’s non-executable stack (mentioned in section 7.5, albeit only a mention and not explicit discussion) are, of course, now standard features in almost all 64-bit processors. These features, such as return address stack handlings, permit handling of virus signatures (see the fourth paragraph of section 3.4 which shows comparing the random number on the stack so as to find an exploit – a virus signature).

Thus, it was well known in the art to use stack handlings (e.g., non-executable stack) for the motivation of virus protection.

Hence, it would have been obvious to those of ordinary skill in the art at the time of the claimed invention to modify Frantzen for the motivation noted in the previous paragraphs so as to teach the claimed invention.

Other than “virus signatures”, Frantzen teaches other features of claims 9 (authentication), 12 (comparing instructions, etc.): (see the fourth paragraph of section 3.4 which shows comparing the random number on the stack so as to find an exploit – a virus signature).

Other features of claims 18-20 (instruction cache, etc.) are well known in the art for the motivation of performance enhancement.

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Other features of claims 21-26 (memory hardware, etc.) are well known in the art for the motivation of information storage.

***Conclusion***

The art made of record and not relied upon is considered pertinent to applicant's disclosure. The art disclosed general background.

***Points of Contact***

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

(571) 273-8300, (for formal communications intended for entry)

**Or:**

(571) 273-3836 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Jung whose telephone number is (571) 272-3836 or Jacques Louis-Jacques whose telephone number is (571) 272-6962.

David Jung

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A handwritten signature in black ink, consisting of a stylized 'D' followed by a series of loops and a long horizontal stroke.

Patent Examiner

9/28/06